ANG 22 7005 to the Specification

Please replace the title beginning at page 1, line 1, with the following rewritten title:

GENERATING PATH-CENTRIC TRAFFIC INFORMATION FOR ANALYSIS

USING AN ASSOCIATION OF ASSOCIATING PACKET-CENTRIC

INFORMATION SAMPLES WITH TO PATH-CENTRIC INFORMATION FOR

ACCRECATION

Please replace the Abstract beginning at page 27, line 3, with the following rewritten Abstract:

Samples from an addressed data forwarding devices, such as a router, are associated with path-centric information. Information from the samples and/or the is used to update corresponding path-centric traffic information is used-to aggregated traffic information, such as flow information for example. The aggregated path-centric traffic information can then be used, for use by traffic analysis operations.

The following is a listing of claims in the application:

- 1 Claim 1 (original): A method for generating traffic
- 2 information for analysis, the method comprising:
- a) accepting at least one sample derived from
- 4 addressed data;
- b) determining path-centric information based on the
- 6 accepted at least one sample; and
- 7 c) adjusting a traffic metric of a traffic parameter
- 8 based on the determined path-centric information.
- 1 Claim 2 (original): The method of claim 1 wherein the
- 2 addressed data is a packet.
- 1 Claim 3 (original): The method of claim 1 wherein the
- 2 sample includes information from the header of a packet.
- 1 Claim 4 (original): The method of claim 1 wherein the act
- 2 of determining path-centric information based on the
- 3 accepted at least one sample includes using at least a part
- 4 of the at least one sample as a search key to find an item
- 5 with a closest matching key in a data structure.
- 1 Claim 5 (original): The method of claim 4 wherein the data
- 2 structure is a searchable data structure selected from a
- 3 group consisting of (A) a hash table, (B) a binary search
- 4 tree, and (C) a trie.

- 1 Claim 6 (original): The method of claim 1 wherein the act
- 2 of determining path-centric information based on the
- 3 accepted at least one sample includes:
- i) using at least a part of the at least one
- sample as a search key to find a first item with
- a closest matching key in a first data structure;
- 7 and
- 8 ii) using at least a part of the first item
- 9 found as a search key to find a second item with
- 10 a matching key in a second data structure.
- 1 Claim 7 (original): The method of claim 6 wherein the
- 2 second item includes path-centric information.
- 1 Claim 8 (original): The method of claim 6 wherein the
- 2 second item includes an origin autonomous system and a peer
- 3 autonomous system.
- 1 Claim 9 (original): The method of claim 6 wherein the
- 2 second item includes an autonomous system path.
- 1 Claim 10 (original): The method of claim 6 wherein the
- 2 first and second data structures are tries.
- 1 Claim 11 (original): The method of claim 6 wherein the
- 2 first data structure is a Radix trie.
- 1 Claim 12 (original): The method of claim 6 wherein the at
- 2 least a part of the at least one sample used as a search
- 3 key is an internet protocol prefix.

- 1 Claim 13 (original): The method of claim 6 wherein the at
- 2 least a part of the at least one sample used as a search
- 3 key is at least one of (A) a source address and (B) a
- 4 destination address.
- 1 Claim 14 (original): The method of claim 6 wherein the at
- 2 least a part of the first item found used as a search key
- 3 is an autonomous system index.
- 1 Claim 15 (original): The method of claim 1 wherein the
- 2 sample includes at least two parameters selected from a
- 3 group parameters consisting of (A) a source address, (B) a
- 4 destination address, (C) a protocol, (D) a source port, (E)
- 5 a destination port, (F) an interface number, (G) a type of
- 6 service, (H) an SNMP index, (I) a kernel logical interface
- 7 index, and (J) a type of interface indice.
- 1 Claim 16 (original): The method of claim 1 wherein the
- 2 path-centric information determined includes an origin
- 3 autonomous system and a peer autonomous system.
- 1 Claim 17 (original): The method of claim 1 wherein the
- 2 path-centric information determined includes an autonomous
- 3 system path.
- 1 Claim 18 (original): The method of claim 1 wherein the act
- 2 of adjusting a traffic metric of a traffic parameter based
- 3 on the determined path-centric information includes:
- i) using a part of the determined path-centric
- 5 information as a key to search items of traffic
- 6 parameters;

- 7 ii) if a traffic parameter with a matching key
- 8 is found, incrementing its traffic metric;
- 9 iii) if none of the traffic parameters has a
- 10 matching key, creating a new item.
- 1 Claim 19 (original): The method of claim 1 wherein the
- 2 traffic metric adjusted is at least one of (A) a byte count
- 3 and (B) a packet count.
- 1 Claim 20 (original): The method of claim 1 wherein the
- 2 traffic parameter is selected from a group of traffic
- 3 parameters consisting of (A) a particular pair of source
- 4 and destination addresses, (B) a particular pair of source
- 5 and destination ports, and (C) a particular pair of
- 6 autonomous systems.
- 1 Claim 21 (previously presented): A method for generating
- 2 data structures for mapping information in a sample derived
- 3 from addressed data, to path-centric information, the
- 4 method comprising:
- a) using network information, building a first data
- 6 structure including items of a first type, each of the
- 7 items of the first type including an autonomous system
- 8 index and an internet protocol prefix, wherein the
- 9 internet protocol prefix is a key; and
- 10 b) using network information, building a second data
- 11 structure including items of a second type, each of
- the items of the second type including an autonomous
- 13 system index and an autonomous system path, wherein
- the autonomous system index is a key,

- 15 wherein the first and second data structures
- 16 may be used for generating traffic information for
- 17 analysis.
- 1 Claim 22 (original): The method of claim 21 wherein the
- 2 first and second data structures are tries.
- 1 Claim 23 (original): The method of claim 21 wherein the
- 2 first data structure is a Radix trie.
- 1 Claim 24 (original): The method of claim 21 wherein the
- 2 network information was derived from routing information.
- 1 Claim 25 (original): An apparatus for generating traffic
- 2 information for analysis, the apparatus comprising:
- a) an input for accepting at least one sample derived
- 4 from addressed data;
- b) means for determining path-centric information
- based on the accepted at least one sample; and
- 7 c) means for adjusting a traffic metric of a traffic
- 8 parameter based on the determined path-centric
- 9 information.
- 1 Claim 26 (original): The apparatus of claim 25 wherein the
- 2 means for determining path-centric information based on the
- 3 accepted at least one sample include a searching facility,
- 4 the search facility (i) using at least a part of the at
- 5 least one sample as a search key to find a first item with
- 6 a closest matching key in a first data structure, and (ii)
- 7 using at least a part of the first item found as a search
- 8 key to find a second item with a matching key in a second
- 9 data structure.

- 1 Claim 27 (original): The apparatus of claim 26 wherein the
- 2 second item includes path-centric information.
- 1 Claim 28 (original): The apparatus of claim 26 wherein the
- 2 second item includes an origin autonomous system and a peer
- 3 autonomous system.
- 1 Claim 29 (original): The apparatus of claim 26 wherein the
- 2 second item includes an autonomous system path.
- 1 Claim 30 (original): The apparatus of claim 25 wherein the
- 2 means for adjusting a traffic metric of a traffic parameter
- 3 based on the determined path-centric information include
- i) a search facility, using a part of the
- 5 determined path-centric information as a key to
- 6 search items of traffic parameters; and
- 7 ii) an aggregator, wherein if a traffic
- 8 parameter with a matching key is found, the
- g aggregator increments the traffic metric of the
- 10 traffic parameter, and wherein if none of the
- traffic parameters has a matching key, the
- 12 aggregator creates a new item.
 - 1 Claim 31 (original): The apparatus of claim 25 wherein the
 - 2 traffic parameter is selected from a group of traffic
 - 3 parameters consisting of (A) a particular pair of source
 - 4 and destination addresses, (B) a particular pair of source
 - 5 and destination ports, and (C) a particular pair of
 - 6 autonomous systems.
 - 1 Claim 32 (original): A data forwarding device comprising:

- a) an addressed data forwarding facility for
- 3 forwarding addressed data based on forwarding
- 4 information;
- b) a routing facility for determining and
- 6 disseminating network state information, and for
- 7 generating path information based on the network state
- 8 information;
- 9 c) a sampler for generating samples based on accepted
- 10 addressed data;
- d) means for determining path-centric information
- based on the samples generated by the sampler; and
- e) means for adjusting a traffic metric of a traffic
- parameter based on the determined path-centric
- 15 information.
 - 1 Claim 33 (original): The data forwarding device of claim
 - 2 32 wherein the routing facility effects a exterior gateway
 - 3 protocol.
 - 1 Claim 34 (original): The data forwarding device of claim
 - 2 32 wherein the routing facility effects a border gateway
 - 3 protocol.
 - 1 Claim 35 (previously presented): A data forwarding device
 - 2 comprising:
 - 3 a) an addressed data forwarding facility for
 - 4 forwarding addressed data based on forwarding
 - 5 information;
 - 6 b) a routing facility for determining and
 - 7 disseminating network state information, and for
 - 8 generating path information based on the network state
 - 9 information;

- 10 c) means, using the path information generated by the 11 routing facility, for building a first data structure
- including items of a first type, each of the items of
- the first type including an autonomous system index
- and an internet protocol prefix, wherein the internet
- protocol prefix is a key; and
- 16 d) means, using the path information generated by the
- 17 routing facility, for building a second data structure
- including items of a second type, each of the items of
- the second type including an autonomous system index
- and an autonomous system path, wherein the autonomous
- 21 system index is a key,
- 22 wherein the first and second data structures may
- 23 be used for generating traffic information for analysis.
 - 1 Claim 36 (original): The data forwarding device of claim
 - 2 35 further comprising:
 - e) a sampler for generating samples based on accepted
 - 4 addressed data;
 - 5 f) means for determining path-centric information
 - based on (i) the samples generated by the sampler,
 - 7 (ii) the first data structure, and (iii) the second
 - 8 data structure; and
 - 9 g) means for adjusting a traffic metric of a traffic
- 10 parameter based on the determined path-centric
- 11 information.
 - 1 Claim 37 (previously presented): A machine-readable medium
 - 2 having stored thereon:
 - a) a first data structure including items of a first
 - 4 type, each of the items of the first type including an
 - 5. autonomous system index and an internet protocol

- 6 prefix, wherein the internet protocol prefix is a key;
- 7 and
- 8 b) a second data structure including items of a
- 9 second type, each of the items of the second type
- including an autonomous system index and an autonomous
- 11 system path, wherein the autonomous system index is a
- 12 key,
- wherein the first and second data structures may
- 14 be used for generating traffic information for analysis.
- 1 Claim 38 (original): The machine-readable medium of claim
- 2 37 wherein the first and second data structures are tries.
- 1 Claim 39 (original): The machine-readable medium of claim
- 2 37 wherein the first data structure is a Radix trie.
- 1 Claim 40 (original): The machine-readable medium of claim
- 2 37 further comprising:
- 3 c) network information derived from routing
- 4 information.